

## **THE CLAIMS**

1. A method for a digital printing press, the method comprising estimating an ink thickness control parameter based on current and past measurements of a state of the digital printing press.
2. The method of claim 1, wherein the control parameter is developer voltage.
3. The method of claim 2, wherein the printing press includes a plurality of different inks, and wherein a developer voltage is estimated for each ink.
4. The method of claim 1, wherein the past measurements are used to generate an estimation model; and wherein the model is applied to the current measurement of the state of the digital printing press.
5. The method of claim 4, wherein the model based on at least one set of past measurements of developer voltage, an ink thickness measurement, and at least one state parameter.
6. The method of claim 5, wherein the ink thickness measurement is inferred from a measurement of optical density.
7. The method of claim 4, further comprising updating the model with additional measurements.
8. The method of claim 1, further comprising using the estimated developer voltage to print swatches at different digital dot areas; and for each swatch measuring optical density, computing physical dot area, and adding dot area coverage to a dot gain table.

9. The method of claim 8, wherein the dot gain table is based on past observations of the state of the digital printing press.
10. The method of claim 1, wherein the control parameter is developer voltage, the method further comprising applying the estimated developer voltage to a BID unit while using the BID unit to deposit ink dots.
11. Apparatus comprising:  
a print engine for depositing ink at a thickness that is determined at least in part by a control parameter; and  
a processor for estimating the control parameter by applying an estimation model to a measured state of the printing apparatus.
12. The apparatus of claim 11, wherein the apparatus is a digital printing press, wherein the control parameter is developer voltage.
13. The apparatus of claim 12, wherein the print engine includes at least one BID unit, and wherein the printing press includes control hardware for controlling each BID unit at an estimated developer voltage.
14. The apparatus of claim 11, further comprising an optical densitometer; and wherein the processor uses an output of the optical densitometer to infer ink thickness.
15. The apparatus of claim 11, further comprising sensors for measuring different state parameters of the digital printing press; and wherein the processor uses at least some of the measurements of the state parameters.
16. The apparatus of claim 11, wherein the estimated developer voltage is used to print swatches at different digital dot areas, and wherein the processor computes physical dot area, and adds dot area coverage to a dot gain table.

17. The apparatus of claim 11, wherein the print engine includes a PIP drum, a writing head and a plurality of BID units disposed about the drum, and an intermediate transfer member adjacent the PIP drum.

18. For a digital printing press, a method comprising generating an estimation model of developer voltage from past measurements of developer voltage and certain state parameters of the digital printing press.

19. The method of claim 18, wherein a statistical learning system is used to generate the model from the past measurements.

20. An article for a processor, the article comprising memory encoded with data for causing the processor to generate an estimation model of developer voltage from past measurements of developer voltage and certain state parameters of a digital printing press.

21. The article of claim 20, wherein a statistical learning system is used to generate the model from the past measurements.

22. An article comprising computer memory encoded with the estimation model of claim 20.

23. An article for a processor of a digital printing press, the article comprising memory encoded with data for causing the processor to apply a developer voltage estimation model to current state measurements of the digital printing press, an output of the model providing an estimated developer voltage.

24. The article of claim 23, wherein the printing press includes a plurality of different BID units, and wherein a developer voltage is estimated for each BID unit.

25. The article of claim 23, wherein the data further causes the processor to use the estimated developer voltage to print swatches at different digital dot areas; and for each swatch compute physical dot area, and add dot area coverage to a dot gain table.

26. The article of claim 25, wherein the dot gain table is based on past state measurements of the digital printing press.

27. The article of claim 23, wherein the data further causes the processor to apply the estimated developer voltage to a BID unit while controlling the BID unit to deposit ink dots.